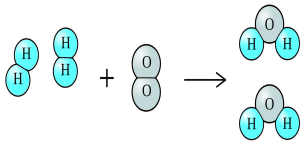
Biochemistry Review Sheet

1) I can define organic and inorganic in terms of biochemistry and give examples of each.

Organic: Contains both carbon and hydrogen. Ex:proteins,carbohydrates,lipids, and nucleic acids.

Inorganic: Doesn't contain carbon and hydrogen. But, may contain one of them. Ex: Water, salt, and carbon dioxide.



$$2H_2 + O_2 \longrightarrow 2H_2O$$

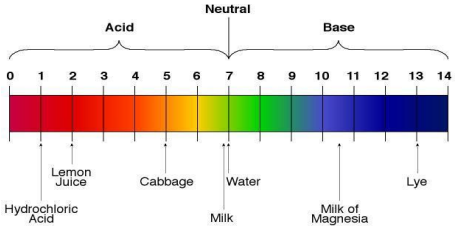
2) I can describe the pH scale and give examples of substances that are acidic and basic.

pH scale: A scale that measure how acidic or basic something is. Acids have a pH level below 7. Bases have a pH level above 7. Neutrals have a pH level of 7.

Acid Ex: Tomatoes, soda, and bananas

Base Ex: Oven cleaner, bleach, and baking soda

Neutral Ex: Water, and blood



The pH Scale

3) I can list the four biological molecule groups and give examples of each.

The four biological molecule groups: Proteins, Lipids, Carbohydrates, Nucleic Acids

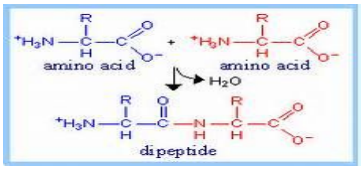
Carbohydrate Ex: Monomers- monosaccharides. Polymers- disaccharides, and polysaccharides

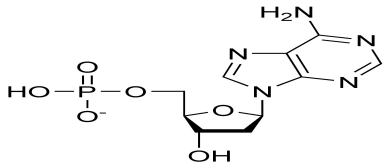
Lipid Ex: Monomers- glycerol, fatty acids. Polymers- fat, phospholipid

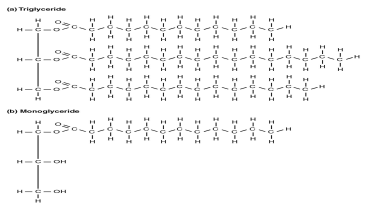
Nucleic Acid Ex: Monomers- nucleotide. Polymers-nucleic acid

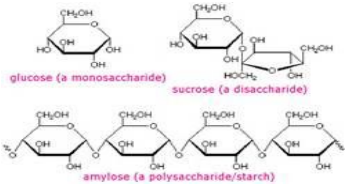
Protein Ex: Monomers- amino acid. Polymers- Protein, Polypeptide.

4) I can describe and identify (visually) the structure of carbohydrates, proteins, lipids and nucleic acids.









Protein-top left, Nucleic Acid-top right (left phosphate,middle deoxyribose,right nitrogen base) , Lipid- bottom right, Carbohydrate- bottom left.

5) **I can** explain and identify the function of the four biological molecules.

The four biological molecule groups: Proteins, Lipids, Carbohydrates, Nucleic Acids

Carbohydrate Functions: Immediate Energy Source, Builds Cell Wall

Lipid Functions: Long Term Energy Source, Steroids, Insulation, Cell Membrane

Nucleic Acid Functions: Stores genetic information, Helps Make Proteins

Protein Functions: Regulates Cell Processes, Form Bones and Muscles, Hemoglobin, Insulin

6) **I can** identify an unknown substance and which biological molecule group it belongs to using indicators.

The four biological molecule groups: Proteins, Lipids, Carbohydrates, Nucleic Acids

Carbohydrate Indicators: Benedict's Solution (Simple Carbs) - substance will turn from a light blue to a greenish orange color , Lugol's/Iodine Solution (Complex Carbs) - substance will turn from amber to blackish blue/dark purple.

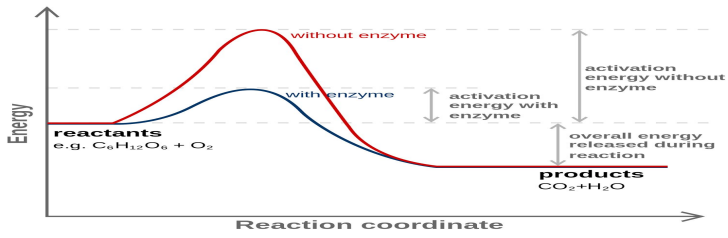
Lipid Indicators: Brown Paper Bag Test - substance will leave a greasy spot on a paper bag

Nucleic Acid Indicators: N/A

Protein Indicators: Biuret's Solution - substance will turn from blue to purple

7)**I can** diagram and label the structures of an enzyme and explains its function.

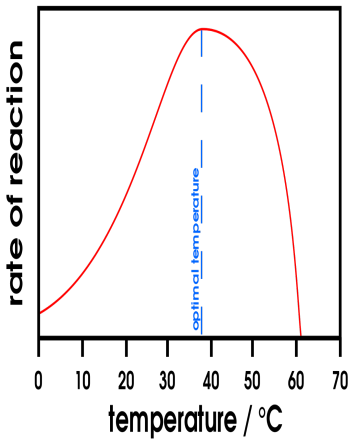
Function of an enzyme: Enzymes act as catalyst to speed up a chemical reaction. Enzymes bond together with substrates at the active site to break down or join them together lowering activation energy. Each enzyme only can fit with one substrate because of their unique shape.



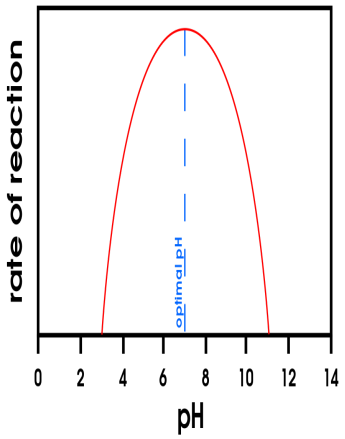
Enzyme + Substrate | Enzyme-Substrate Complex | Enzyme + Products

8) I can understand what it means for enzymes to function best at optimal levels.

Each enzyme has their own optimal temperatures and pH level. These are the temperature and pH level they perform at best for example Intestinal Protease had an optimal pH of 8. Not optimal pH levels and temperatures can cause the enzyme to denature (change) and may cause it to not



function.


rate of reaction
optimal pH
0
2
4
6
8
10
12
14
pH